

CLAIMS

1. A metal laminate comprising between two outer metal sheets an adhesive polymer layer, characterized in that the adhesive polymer layer comprises polyamide, a copolymer of ethylene and an unsaturated carboxylic acid and/or a derivative thereof and a reactive copolymer.
2. A metal laminate according to claim 1, wherein the copolymer of ethylene and an unsaturated carboxylic acid and/or a derivative thereof is a grafted polyethylene.
3. Metal laminate according to claim 1 or 2, wherein the surface of the first outer metal sheet is greater than the surface of the second outer metal sheet.
4. Metal laminate according to any of claims 1 to 3, wherein the outer metal sheets are made of steel or aluminium.
5. Metal laminate according to any of claims 1 to 4, wherein the polyamide comprises polyamide 6.
6. Metal laminate according to any of claims 1 to 5, wherein the adhesive polymer layer comprises 20 to 95% in weight of polyamide.
7. Metal laminate according to claim 6, wherein the adhesive polymer layer comprises 45 to 65% in weight of polyamide.
8. Metal laminate according to claim 1 to 7, wherein the copolymer of ethylene and an unsaturated carboxylic acid is a copolymer of ethylene

and an unsaturated carboxylic acid containing 1 to 6 carboxylic groups and/or the derivative thereof.

5 9. Metal laminate according to claim 8, wherein the polyethylene is grafted with maleic acid and/or a derivative thereof.

10. Metal laminate according to claim 9, wherein the polyethylene is grafted with maleic acid anhydride.

10 11. Metal laminate according to any of claims 1 to 10, wherein the adhesive polymer layer comprises 5 to 80 % in weight of grafted polyethylene.

15 12. Metal laminate according to claim 11, wherein the adhesive polymer layer comprises 30 to 50 % in weight of grafted polyethylene.

13. Metal laminate according to any of claims 1 to 12, wherein the adhesive polymer layer comprises non linear grafted polyethylene.

20 14. Metal laminate according to any of claims 1 to 13, wherein the adhesive polymer layer comprises a polyamide continuous phase.

25 15. Metal laminate according to any of claims 1 to 14, wherein the reactive copolymer is a copolymer of styrene and an unsaturated carboxylic acid and/or a derivative thereof.

16. Metal laminate according to claim 15, wherein the reactive copolymer comprises a styrene- maleic acid anhydride copolymer.

17. Metal laminate according to any of claims 1 to 16, wherein the adhesive polymer layer comprises 0.5 to 10 % in weight of a reactive copolymer.
- 5 18. Metal laminate according to any of claims 1 to 17, wherein the adhesive polymer layer further comprises an epoxy resin.
19. Metal laminate according to any of claims 1 to 18, wherein the adhesive polymer layer further comprises a flame retardant agent.
- 10 20. Metal laminate according to any of claims 1 to 19, wherein the adhesive polymer layer comprises an intermediate layer of a different polymer.
- 15 21. Process for the manufacture of a metal laminate according to any of claims 1 to 20 comprising the steps consisting in :
- a. Providing a first and a second metal sheet;
 - b. Applying a polymer composition comprising polyamide, grafted
 - 20 polyethylene and a reactive copolymer onto the first metal sheet;
 - c. Applying the second metal sheet onto the polymer layer applied onto the first metal sheet to obtain a metal laminate; and
 - d. Heating the metal laminate to complete the adhesion.
- 25 22. Process according to claim 21, wherein the polymer composition is previously extruded to form a polymer film.
23. Process according to claim 21, wherein the polymer film is directly extruded onto the first metal sheet.
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24. Use of the metal laminate according to claims 1 to 20 for the manufacture of automotive body parts.